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tention. This is not a matter of lack of space; it results from rigidly following a predetermined plan, and ignoring everything which does not fall within the artificially limited scope of the enquiry. It was the same attitude which caused Sir Geo. F. Hampson, in the great catalogue of moths published by the British Museum, to refuse to recognize or mention the genitalic characters of the segregates of *Apamea nictitans*, although the facts, accompanied by prepared slides, were freely offered for his use. This extreme rigidity of method has certain advantages; it permits consistency of treatment, and allows the author to base the whole classification on characters which he thoroughly understands and is accustomed to use. It may also be urged with reason that it is impossible to study or describe *all* the structures of animals, and consequently it is necessary to make a selection. Still another argument may be based on the fact which modern comparative morphology is daily making more apparent, that the minute study of almost any important structure in a long series of species will afford a fairly sound basis for classification. Thus Dr. Asa C. Chandler, in his remarkable account of the microscopical features of feathers, lately published by the University of California, shows that if we possessed *only* feathers, the birds otherwise being wholly unknown to us, we could construct from them a rational classification of the class Aves. Similarly, Dr. Edna Mosher, in a study of the Lepidopterous pupa published this year by the Illinois State Laboratory of Natural History, is able to construct a classification of moths and butterflies on the pupæ alone. It is noteworthy, however, that while the feathers of birds and the pupæ of moths essentially confirm existing systems of classification, they afford some discordant facts, which at least suggest the propriety of certain modifications. Precisely the same thing is true of the scales of fishes. The development of organs and characters in animals does not present an even front; evolution within the limits of the organism is unequal in degree and rapidity, and hence each set of structures teaches some lessons which the others do not supply. No single

worker, dealing with a large group, can take the time to search for all these illuminating footnotes to the book of nature. It is the work of the comparative morphologist to uncover them; and while the professional taxonomist may properly express an opinion whether in this or that case they are significant for his purposes, he can not safely look the other way, pretending that they do not exist.

T. D. A. COCKERELL

UNIVERSITY OF COLORADO

J. L. Pagel's Einführung in die Geschichte der Medizin in 25 akademischen Vorlesungen. Zweite Auflage. Durchgesehen, teilweise umgearbeitet und auf den heutigen Stand gebracht von KARL SUDHOFF in Leipzig. Berlin, 1915, in 8°. Verlag von S. Karger, pp. i-xv + 1-616.

Within the past twenty years there has been developed, especially in Germany, an interesting subject—the history of medicine. There has been great progress in the development of this subject in all of its phases and much light has been thrown on many new lines of intellectual endeavor. There are two journals which are devoted exclusively to the history of medicine and related subjects. These are: "*Archiv für die Geschichte der Medizin*," edited by Karl Sudhoff, in Leipzig, of which eight volumes have appeared, and the "*Zoologische Annalen, Geschichte der Zoologie*," edited by Max Braun, 1905 to date, of which likewise eight volumes have appeared.

The two men involved in the production of the book the title of which is given above have been largely concerned in the development of the history of medicine, together with their co-workers Puschmann, Neuburger, Töply, M. Holl and others. It is an important event when the editor of the "*Archiv für die Geschichte der Medizin*" issues a second edition of Pagel's *Einführung*. After a lapse of seventeen years this important work is issued in a second edition, which is increased in scope and brought down to date by Karl Sudhoff. The work was first issued by Pagel in 1898 as Part I. of a two-volume work; the second part being: "*Historisch-medicinische Bibliographie*

für die Jahre 1875-1895." This later part has not been included in the new edition.

In regard to the scope of the work, Sudhoff, in the preface to the second edition, says: "Dass ich persönlich unter 'Geschichte der Medizin' etwas mehr verstehe als eine medizinische Literaturgeschichte: eine kulturgeschichtliche Erfassung der heilenden Kunst und Wissenschaft im Gesamtleben der Zeiten, dürfte bekannt sein, kommt aber hier nicht in Frage, wo es sich um eine 'Einführung,' um ein Lehrbuch der Medizingeschichte handelt."

Pagel, likewise, has a broad idea of the importance of the history of medicine, for he says: "Die ganze moderne Medizin baut sich auf dem Gedanken der Entwicklung auf."

As the title indicates, the volume was based originally on a series of lectures, more or less popular in nature, but all of them readable. The lectures are a little more thorough in their content than those of Ernst Schwalbe¹ and the additions made by Karl Sudhoff raises it out of the ranks of a volume of lectures and forms the greater part of my excuse for reviewing the work in this place.

The work proceeds along well-defined and usual lines, taking up serially the development of medicine in the various countries. There is nothing new or startling in the method of their presentation, but the facts are essentially all there and the addenda and references by the editor make the book a most useful one for the beginning student.

The first lecture deals with the beginnings of the healing art and discusses the nature of medical work in ancient and modern China and Japan and among the Aztecs of Mexico. The second lecture discusses medical history among the peoples of ancient India, Babylonia, Egypt, Palestine and the other countries of Asia Minor. The succeeding four lectures are devoted to the medical lore of the Greeks, with one entire chapter given to Galen.

The lectures from this point take up the development of modern medicine, and the later lectures are given a more biographical

cast as various eminent men exerted an influence over various phases of medical work. Interpolated throughout these pages there is given by Sudhoff, in a way to be found nowhere else, the sources of information, recent developments of each special topic and recent literature, but not in such abundance as to be tiresome to the general reader. So that in addition to being a volume of very readable lectures it may also be used as a work of reference of no small importance, though of course not attempting to rank with the Handbücher of Pagel and Häser. It will appeal to the general reader as being free from a number of technicalities and will be found to be one of the best one-volume presentations of medical history of recent years.

ROY L. MOODIE

UNIVERSITY OF ILLINOIS,
COLLEGE OF MEDICINE,
CHICAGO

THE ZERO AND PRINCIPLE OF LOCAL VALUE USED BY THE MAYA OF CENTRAL AMERICA

HISTORIANS of mathematics refer to the vigesimal system of the Maya¹ of Central America and southern Mexico, but, to my knowledge, no historian conveys the information that the Maya, in the writing of numbers, employed symbols for zero and the principle of local value. Added interest attaches to this matter from the fact that the Maya appear to have done this earlier than any one else. My attention is called to this achievement of the Maya by a recent book issued by the Government Printing Office in Washington, entitled *An Introduction to the Study of the Maya Hieroglyphs*, by Sylvanus Griswold Morley, 1915. This publication constitutes Bulletin 57 of the Bureau of American Ethnology. Nearly all the information contained in this article is drawn from that source.

The age of the Maya inscriptions and codices is a matter of vital interest and, as yet, of considerable doubt. It is known that

¹ "Vorlesungen ueber Geschichte der Medizin," Jena, 1909.

¹ See, for instance, M. Cantor, "Geschichte der Mathematik," Vol. I., 3d ed., 1907, p. 9.